

Before the Michigan House Oversight Committee  
Hearing on Smart Electric Meters  
December 2<sup>nd</sup>, 2014

Exhibit to Accompany Testimony of David Sheldon

Attached are the following documents:

(1) Sworn testimony of Dr. David Carpenter, as submitted to the Michigan Public Service Commission by David Sheldon as part of the remanded hearing on U-15768, where the Michigan Court of Appeals had directed the commission to redo its hearing and to consider a wide range of issues pertaining to whether customer funding of smart meters should be allowed.

The Commission disallowed this testimony on the basis that it had previously disallowed intervenor status to Mr. Sheldon as it denied intervenor status to three others who were the only intervenors who would introduce testimony with the breadth demanded by the COA. The Commission's decision to disallow the intervenor status (and Dr. Carpenter's testimony) is currently under appeal to the COA.

(2) Exhibit No. 1 to the above testimony of Dr. Carpenter, consisting of the 2012 statement of Dr. Carpenter and 45 other scientists and health professionals concerning hazards of radiation from 'smart meters'.

(3) Curriculum Vitae of Dr. Carpenter (1<sup>st</sup> 2 pages of)

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application and request )  
of the DETROIT EDISON COMPANY seeking )  
approval and authority to implement its ) Case No U-15768  
proposed Advanced Metering Infrastructure )  
opt out program. )

QUALIFICATIONS & DIRECT TESTIMONY OF DAVID O. CARPENTER, M.D.

1 Q Do you swear that the testimony you are about to give is the truth, the whole  
2 truth, and nothing but the truth?

3 A I do.

4 Q Can you please state your name, address and contact information?

5 A. David O. Carpenter, M.D. Institute for Health and the Environment, University at  
6 Albany, Rensselaer, NY 12144. Phone: 518-525-2660.  
7 email: dcarpenter@albany.edu

8 Q. Who are you testifying for in this proceeding?

9 A. Intervener David Sheldon.

10 Q. Are you currently in private medical practice and, if so, could you state the name  
11 of your practice and any areas of specialization within the practice?

12 A. I am a public health physician and as such do not hold a license to practice  
13 patient medicine. My area of specialization is environmental health and disease  
14 prevention.

15 Q. Are you also associated with the Institute for Health and the Environment at the  
16 University at Albany, State University of New York?

1 A. Yes.

2 Q. Could you tell us briefly what is the scope of research done there and what is  
3 your own role at this institute?

4 A. I am the Director of the Institute for Health and the Environment, a Collaborating  
5 Centre of the World Health Organization. The Institute promotes interdisciplinary  
6 research on issues relation to both health and the environment in both domestic  
7 and international settings.

8 Q. Have you devoted a substantial part of your career to studying the effects of low-  
9 level non ionizing radiation upon human beings?

10 A. Yes.

11 Q. Do you understand the purpose of this administrative law case and why we have  
12 asked you to contribute your testimony?

13 A. Yes, I understand that the purpose is for evidence to be heard anew, on remand  
14 from the Michigan Court of Appeals, on whether the Commission should permit  
15 Detroit Edison Company to charge back the costs of AMI meters, aka "smart  
16 meters", to its customers. I understand the Court of Appeals has directed the  
17 Commission to consider the "risks and burdens" of AMI technology, as well as its  
18 presumed benefits, before deciding to approve such a source of funding.

19 Q. Do you have an opinion, based on your professional knowledge and experience,  
20 as to whether the widespread deployment of radio transmitting smart meters is a  
21 safe and prudent course of action, given the present state of knowledge  
22 concerning the effects of such radio transmissions upon biological processes?

1 A. I do. My belief is that such widespread deployment cannot be justified at this  
2 time based on the peer-reviewed research we have. I would say that universal  
3 deployment of such meters throughout our urban areas amount to an experiment  
4 on the people living in those areas, an experiment without the consent of the  
5 experimental subjects.

6 Q. Can you substantiate that point?

7 A. Yes. Earlier this year I was asked to write my concerns about the health hazards  
8 of smart meters. Forty five medical professionals and scientists, who together  
9 have authored hundreds of peer-reviewed articles on the effects of  
10 electromagnetic radiation, joined together with me in a statement expressing our  
11 views on the effects of low level radio frequency and microwave radiation in  
12 general and smart meter radiation in particular. That statement is attached to my  
13 testimony as Exhibit One.

14 Q. And can you tell us briefly what conclusions were expressed?

15 A. While smart meters are too new for there to be human health studies specifically  
16 on exposure from smart meters, there is a strong body of evidence that  
17 demonstrates a variety of adverse human health effects, including cancer and  
18 effects on brain and behavior, coming from exposure to radiofrequency radiation  
19 like that generated by wireless smart meters.

20 Q. To the best of your knowledge, what percentage of the general public could be  
21 called "electro-sensitive", i.e. people who experience more or less immediate  
22 symptoms when exposed to electromagnetic radiation, such as headaches,  
23 mental confusion, rapid heartbeat and so on?

1 A. While the evidence is incomplete for several reasons, most reports indicate that  
2 between 5 and 10% of the population show symptoms of electrical  
3 hypersensitivity.

4 Q. Is it possible that electro-sensitive people are like the canary in the mine? Or,  
5 more precisely, is it possible that the kind of electromagnetic fields that cause  
6 electro-sensitive people to experience immediate symptoms of distress, are also  
7 the kind of fields that are likely to cause long term illness to a much larger group  
8 of individuals who do not experience immediate symptoms?

9 A. Yes, this is not only possible but likely.

10 Q. So would it be fair to say that from a public health standpoint, protecting the most  
11 vulnerable among us might well be viewed not only as an act of compassion  
12 toward them but also have the effect of protecting the majority of the population  
13 from long term diseases like cancer or neurological diseases like Alzheimer's  
14 Disease?

15 A. This is true.

16 Q. Is there data on smart meters going back far enough to trace the long term  
17 effects of such meters on people?

18 A. No, but until more data becomes available we have to make inferences based on  
19 longer term data that we do have concerning use of cell phones and people living  
20 near to radio transmission towers. These studies show that increased  
21 radiofrequency exposure increases risk of cancer, and that the most vulnerable  
22 parts of the population are children and teenagers.

23 Q. Have you had occasion to testify previously about such effects?

1 A. Yes, in January, 2012, I testified concerning the effects of WiFi radiation on  
2 school children in the Oregon Public Schools. My legal testimony in that case is  
3 attached here as Exhibit Two.

4 Q. Can you give us a very brief summation in a few sentences as to your  
5 conclusions about the Wi-Fi study?

6 A. As with wireless smart meters, WiFi in schools exposes children constantly to  
7 radiofrequency radiation. As with smart meters, the specific health effects from  
8 exposure to WiFi have not been determined, but WiFi is radiofrequency radiation.  
9 Because children are more vulnerable than adults to radiofrequency radiation, as  
10 documented by studies from cell phone use and people living near to radio  
11 transmission towers, it is unwise to use WiFi in schools when a wired connection  
12 to the Internet does not increase exposure.

13 Q. Does an opt-out plan really solve the exposure risk you have been describing  
14 here and in your exhibits?

15 A. Not entirely. Not having a smart meter on one's own home will reduce the  
16 potentially harmful exposure, but the customer opting out is still going to be  
17 exposed to a whole blanket of electromagnetic radiation from the smart meters of  
18 immediate neighbors and from all the transmitting and receiving devices and  
19 repeaters the utility must install to allow all these meters to report their data, as  
20 well as other sources of radiofrequency radiation.

21 Q. If a smarter grid is necessary, what would be the best way to implement the  
22 necessary metering technology?

1 A. A properly designed system of wired smart meters using internet cable or fiber  
2 optics need not result in any elevated exposure to radio frequencies, but would  
3 still provide the utility with information about daily use.

4 Q. Detroit Edison is currently offering an opt-out meter that they call a "digital meter"  
5 which is the Itron smart meter with the radios turned off. We understand that it  
6 will store detailed usage information that a meter reader can download through a  
7 plug-in connection or through an optical port. Do you believe that this meter  
8 entirely solves the problem of RF exposure?

9 A. I am not familiar with the details of this meter and so cannot comment on whether  
10 or not it would be an entirely safe alternative. But, in principle, it should be  
11 possible to devise a safe digital meter that could communicate through a plug-in  
12 connection, or through hard-wired means.

13 Q. Is there anything else you would like to add to your testimony today?

14 A. Exposure to radiofrequency radiation has been shown to result in human  
15 disease, and we should take every step within reason to avoid increased  
16 exposure. All the benefits of a smart grid technology could be obtained with  
17 wired smart meters without increasing the risk of exposure and human disease.  
18 But at the very least everyone should have the opportunity to opt-out of having  
19 wireless smart meters placed on their home.

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David O. Carpenter, M.D.

Dated: November 13, 2012

  
DOREEN A. VanVORST

## **EXHIBIT ONE**

**2012 statement of David O. Carpenter, M.D. and  
45 other scientists and health professionals  
concerning hazards of radiation from 'smart meters'**

**Institute for Health and the Environment  
State University of New York at Albany**





We, the undersigned are a group of scientists and health professionals who together have coauthored hundreds of peer-reviewed studies on the health effects of electromagnetic fields (EMFs). We wish to correct some of the gross misinformation found in the letter regarding wireless “smart” meters that was published in the Montreal daily *Le Devoir* on May 24. Submitted by a group Quebec engineers, physicists and chemists, the letter in question reflects an obvious lack of understanding of the science behind the health impacts of the radiofrequency (RF)/microwave EMFs emitted by these meters.

The statement that “Thousands of studies, both epidemiological and experimental in humans, show no increase in cancer cases as a result of exposure to radio waves of low intensity...” is false (1). In fact, only a few such studies, case-control studies of mobile phone use, certainly not thousands, have reported no elevations of cancer, and most were funded by the wireless industry. In addition, these reassuring studies contained significant experimental design flaws, mainly the fact that the populations followed were too small, were followed for a too short a period of time and had used mobile phones for too short a period of time.

Non industry-funded studies have clearly demonstrated a significant increase in cancer cases among individuals who have suffered from prolonged exposure to low-level microwaves, transmitted notably by radio antennas. The effects were best documented in meta-analyses that have been published and that include grouped results from several different studies: these analyses consistently showed an increased risk of brain cancer among regular users of a cell phone who have been exposed to microwaves for at least ten years.

### Brain Cancer Rates

Furthermore, the argument that brain cancer rates do not indicate an overall increase in incidence is not evidence that cell phones are safe: the latency for brain cancer in adults after environmental exposure can be long, up to 20-30 years. Most North Americans haven’t used cell phones extensively for that long. The evidence of the link between long-term cell phone use and brain cancer comes primarily from Northern Europe, where cell phones have been commonly used since the 1990s.

Children are especially at risk. In May 2012, the U.K.’s Office of National Statistics reported a 50 percent increase in incidence of frontal and temporal lobe tumors in children between 1999 and 2009. This statistic is especially disturbing since in May 2011, after reviewing the published scientific literature regarding cancers affecting cell phone users, the International Agency for Research on Cancer (IARC) classified radiofrequency radiation as a 2B, possible human carcinogen. Despite the absence of scientific consensus, the evidence is sufficiently compelling for any cautious parent to want to reduce their loved one’s exposure to RF/microwave emissions as much as possible, as recommended by various countries such as Austria, Belgium, Germany, Russia and the United Kingdom.

## **Electrosensitivity**

- Public fears about wireless smart meters are well-founded. They are backed by various medical authorities such as those of the Santa Cruz County (California) Public Health Department. These authorities are worried about the growing number of citizens who say they have developed electrohypersensitivity (EHS), especially since for many of them, the symptoms developed after the installation of such meters (it takes some time for most people to link the two events).

Since the turn of the millennium, people are increasingly affected by ambient microwaves due to the growing popularity of wireless devices such as cell phones and Wi-Fi Internet. Therefore, the mass deployment of smart grids could expose large chunks of the general population to alarming risk scenarios without their consent. According to seven surveys done in six European countries between 2002 and 2004, about 10% of Europeans have become electrosensitive, and experts fear that percentage could reach 50% by 2017. The most famous person to publicly reveal her electrosensitivity is Gro Harlem Brundtland, formerly Prime Minister of Norway and retired Director of the World Health Organization (WHO).

While there is no consensus on the origins and mechanisms of EHS, many physicians and other specialists around the world have become aware that EHS symptoms (neurological, dermatological, acoustical, etc.) seem to be triggered by exposure to EMF levels well below current international exposure limits, which are established solely on short-term thermal effects (2). Organizations such as the Austrian Medical Association and the American Academy of Environmental Medicine have recognized that the ideal way to treat of EHS is to reduce EMF exposure.

Therefore, caution is warranted because the growing variety of RF/microwave emissions produced by many wireless devices such as smart meters have never been tested for their potential biological effects.

## **Well-known bioeffects**

While the specific pathways to cancer are not fully understood, it is scientifically unacceptable to deny the weight of the evidence regarding the increase in cancer cases in humans that are exposed to high levels of RF/microwave radiation.

The statement that “there is no established mechanism by which a radio wave could induce an adverse effect on human tissue other than by heating” is incorrect, and reflects a lack of awareness and understanding of the scientific literature on the subject. In fact, more than a thousand studies done on low intensity, high frequency, non-ionizing radiation, going back at least fifty years, show that some biological mechanisms of effect do not involve heat. This radiation sends signals to living tissue that stimulate biochemical changes, which can generate various symptoms and may lead to diseases such as cancer.

Even though RF/microwaves don't have the energy to directly break chemical bonds, unlike ionizing radiation such as X-rays, there is scientific evidence that this energy can cause DNA damage indirectly leading to cancer by a combination of biological effects. Recent publications have documented the generation of free radicals, increased permeability of the blood brain barrier allowing potentially toxic chemicals to enter the brain, induction of genes, as well as altered electrical and metabolic activity in human brains upon application of cell phone RF/microwaves similar to those produced by smart meters.

These effects are cumulative and depend on many factors including RF/microwave levels, frequency, waveform, exposure time, bioavailability between individuals and combination with other toxic agents.

In addition to these erratic bursts of modulated microwaves coming from smart meters that are transferring usage data to electric, gas and water utilities, wireless and wired smart (powerline communication) meters are also a major source of “dirty electricity” (electrical interference of high frequency voltage transients typically of kilohertz frequencies). Indeed, some scientists, such as American epidemiologist Sam Milham, believe that many of the health complaints about smart meters may also be caused by dirty electricity generated by the « switching » power supply activating all smart meters. Since the installation of filters to reduce dirty electricity circulating on house wiring has been found to relieve symptoms of EHS in some people, this method should be considered among the priorities aimed at reducing potential adverse impacts. Indeed, the Salzburg State (Austria) Public Health Department confirms its concern about the potential public health risk when in coming years almost every electric wire and device will emit such transient electric fields in the kilohertz-range due to wired smart meters.

### **Rather be safe than sorry**

The apparent adverse health effects noted with smart meter exposure are likely to be further exacerbated if smart appliances that use wireless communications become the norm and further increase unwarranted exposure.

To date, there have been few independent studies of the health effects of such sources of more continuous but lower intensity microwaves. However, we know after decades of studies of hazardous chemical substances, that chronic exposure to low concentrations of microwaves can cause equal or even greater harm than an acute exposure to high concentrations of the same microwaves.

This is why so many scientists and medical experts urgently recommend that measures following the Precautionary Principle be applied immediately — such as using wired meters — to reduce biologically inappropriate microwave exposure. We are not advocating the abolishment of RF technologies, only the use of common sense and the development and implementation of best practices in using these technologies in order to reduce exposure and risk of health hazards.

### 1. Scientific papers on EMF health effects

### 2. Explanation and studies on electrosensitivity

### 3. Governments and organizations that ban or warn against wireless technology

- David O. Carpenter, MD, Director, Institute for Health & the Environment, University at Albany, USA
- Jennifer Armstrong, MD, Past President, Canadian Society of Environmental Medicine, Founder, Ottawa Environmental Health Clinic, Ontario, Canada
- Pierre L. Auger, M. D., FRCPC, Occupational medicine, Multiclinique des accidentés 1464, Montreal, Quebec, Canada
- Fiorella Belpoggi, Director Cesare Maltoni Cancer Research Center, Ramazzini Institute, Bologna, Italy
- Martin Blank, PhD, former President, Bioelectromagnetics Society, Special Lecturer, Department of Physiology and Cellular Biophysics, Columbia University Medical Center, New York, USA

- John Podd, PhD, Professor of Psychology (experimental neuropsychology), Massey University, New-Zeland
- William J. Rea, MD, thoracic and cardiovascular surgeon, founder of the Environmental Health Center, Dallas, Tx, USA
- Elihu D. Richter, MD, Professor, Hebrew University-Hadassah School of Public Health and Community Medicine, Jerusalem, Israel
- Leif G. Salford, MD, Senior Professor of Neurosurgery, Lund University, Sweden
- Nesrin Seyhan, MD, Founder and Chair of Biophysics, Medical Faculty of Gazi University, Turkey
- Cyril W. Smith, PhD, lead author of "Electromagnetic Man", retired from Electronic and Electrical Engineering, University of Salford, UK
- Morando Soffritti, MD, □ Scientific Director of the European Foundation for Oncology and Environmental Sciences "B. Ramazzini" in Bologna, Italy
- Antoinette "Toni" Stein, PhD, Collaborative on Health and the Environment (CHE-EMF Working Group), Co-Coordinator, Berkeley, CA, USA
- Stanislaw Szmigielski, MD, PhD Professor of Pathophysiology, Consulting Expert, former director of Microwave Safety, Military Institute of Hygiene and Epidemiology, Warsaw, Poland
- Bradford S. Weeks, MD, Director, The Weeks Clinic, Clinton, WA, USA
- Stelios A. Zinelis, MD, Vice-President, Hellenic Cancer Society, Cefallonia, Greece

- Barry Breger, MD, Centre d'intégration somatosopique (orthomolecular medicine), Montreal, Quebec
- John Cline, MD, Professor, Institute for Functional Medicine, Federal Way, WA, USA, Medical Director, Cline Medical Centre, Nanaimo, BC, Canada
- Alvaro Augusto de Salles, PhD, Professor of Electrical Engineering, Federal University of Rio Grande do Sul, Porto Alegre, Brazil
- Christos Georgiou, Prof. Biochemistry, Biology Department, University of Patras, Greece
- Andrew Goldsworthy, PhD, Honorary lecturer in Biology, Imperial College, London, UK
- Claudio Gómez-Perretta, MD, PhD, Director, Centro de Investigación, Hospital Universitario LA Fe, Valencia, Spain
- Livio Giuliani, PhD, Senior Researcher, National Insurance Institute (INAIL), Chief of Radiation and Ultrasounds Research Unit, Rome, Italy
- Yury Grigoriev, PhD, Chair Russian National Committee on Non-Ionizing Radiation Protection, Moscow, Russia
- Settimio Grimaldi, PhD, Director, Institute of Translational Pharmacology (Neurobiology and molecular medicine), National Research Council, Rome, Italy
- Magda Havas, PhD, Centre for Health Studies, Trent University, Canada
- Lennart Hardell, MD, Professor of Oncology, University Hospital, Örebro, Sweden
- Denis L. Henshaw, PhD, Professor of Physics, Head of The Human Radiation Effects Group, University of Bristol, UK
- Ronald B. Herberman, MD, Chairman of Board, Environmental Health Trust, and Founding Director emeritus, University of Pittsburgh Cancer Institute, USA
- Donald Hillman, PhD, Dairy Science, Professor Emeritus, Department of Animal Science, Michigan State University, USA
- Isaac Jamieson, PhD, Environmental Science (electromagnetic phenomena in the built environment), independent architect, scientist and environmental consultant, Hertfordshire, UK
- Olle Johansson, PhD, Professor of Neuroscience (Experimental Dermatology Unit), Karolinska Institute, Stockholm, Sweden
- Yury Kronn, PhD, Soviet authority on physics of nonlinear vibrations and high frequency electromagnetic vibrations, founder of Energy Tools International, Oregon, USA
- Henry Lai, PhD, Professor of Bioengineering, University of Washington School of Medicine, Seattle, WA, USA
- Abraham R. Liboff, PhD, Professor Emeritus, Department of Physics, Oakland University, Rochester, Michigan, USA
- Don Maisch, PhD, Researcher on radiation exposure standards for telecommunications frequency, EMFacts Consultancy, Tasmania, Australia
- Erica Mallery-Blythe, MD, Emergency Medicine Physician, England
- Andrew A. Marino, MD, PhD, JD, Professor of Neurology, LSU Health Sciences Center, Shreveport, LA, USA
- Karl Maret, MD, M.Eng., President, Dove Health Alliance, Aptos, CA, USA
- Andrew Michrowski, PhD, Director, Planetary Association for Clean Energy, Ottawa, Canada
- Sam Milham, MD, former chief epidemiologist, Washington State Department of Health, USA
- Joel M. Moskowitz, PhD, Director, Center for Family and Community Health, School of Public Health, University of California, Berkeley
- Gerd Oberfeld, MD, Public Health Department, Salzburg State Government, Austria
- Mike O'Carroll, PhD, Professor Emeritus (Applied Mathematics), University of Sunderland, UK
- Jerry L. Phillips, PhD, Director, Center for Excellence in Science, Department of Chemistry and Biochemistry, University of Colorado, USA

## ***CURRICULUM VITAE***

**Name:** David O. Carpenter

**Home Address:** 2749 Old State Road  
Schenectady, New York 12303

**Positions Held:**

Director, Institute for Health and the Environment  
University at Albany  
Professor, Environmental Health Sciences  
School of Public Health, University at Albany  
5 University Place, A217, Rensselaer, NY 12144

**Education:** 1959 B.A., Harvard College, Cambridge, MA  
1964 M.D., Harvard Medical School, Boston, MA

**Positions Held:**

9/61-6/62 Research Fellow, Department of Physiology, University of Göteborg, Sweden with Professor Anders Lundberg  
7/64-6/65 Research Associate, Department of Physiology, Harvard Medical School, Boston, MA under the direction of Dr. Elwood Henneman  
7/65-2/73 Neurophysiologist, Laboratory of Neurophysiology, National Institutes of Mental Health, Dr. Edward V. Evarts, Chief, Assistant Surgeon, USPHS, currently a Reserve Officer in the USPHS.  
2/73-3/80 Chairman, Neurobiology Department Armed Forces Radiobiology Research Institute, Defense Nuclear Agency, Bethesda, MD  
3/80-9/85 Director, Wadsworth Center for Laboratories and Research, New York State Department of Health, Albany, NY  
9/85-1/98 Dean, School of Public Health, University at Albany  
9/85-Pres. Professor, Departments of Environmental Health Sciences and Biomedical Sciences, School of Public Health, University at Albany.  
9/85-7/98 Research Physician, Wadsworth Center for Laboratories and Research, New York State Department of Health, Albany, NY  
1/98-1/05 Adjunct Professor in the Center for Neuropharmacology & Neuroscience, Albany Medical College, Albany, NY  
2001-Pres. Director, Institute for Health and the Environment, University at Albany, SUNY, Rensselaer, NY. The Institute was named a Collaborating Center of the World Health Organization in 2011.  
2005-Pres. Senior Fellow, Alden March Bioethics Institute, Albany Medical College/Center, Albany, New York  
**Editor-in-Chief:** Cellular and Molecular Neurobiology, 1981 - 1987  
**Editorial Advisor:** Cellular and Molecular Neurobiology, 1987 - Present  
**Editorial Boards:** Journal of Public Health Management and Practice, 1995 - 2002  
International Journal of Occupational Medicine & Environmental Health  
1996 - Present

Journal of Alzheimer's Disease— Associate Editor, 2007-2009  
Reviews in Environmental Health; 2008-present  
International Archives of Occupational and Environmental Health; 2009-present.  
Journal of Environmental and Public Health, 2009-present.  
Environmental Health Perspectives, 2010-present

**National and International Committees:**

- 1978, 1981 Physiology Study Section (Ad hoc member)
- 1979-1985 NIH International Fellowship Study Section
- 1974-1981 Member, Steering Committee of the Section on the Nervous System, American Physiological Society (Chairman of the Committee, 9/76-4/80)
- 1981-1989 Member, USA National Committee for the International Brain Research Organization
- 1985-1986 Committee on Electric Energy Systems of the Energy Engineering Board, National Research Council
- 1986-1987 Member, Neurophysiology Peer Panel for the National Aeronautics and Space Administration
- 1987-1989 Member, Science Advisory Council of the American Paralysis Association
- 1987-1990 Advisory Panel for the Electric Energy System Division, U.S. Department of Energy
- 1985-1993 Committee #79, National Council on Radiation Protection and Measurements
- 1986-1997 Member, Legislative and Education Committees, Association of Schools of Public Health
- 1989-1994 Member, Neuroscience Discipline Working Group, Life Sciences Division of the NASA
- 1994, 1995 Federation of American Societies for Experimental Biology Consensus Conference on FY 1995 Federal Research Funding
- 1994-1997 Member, Legislative Committee of the Association of Schools of Public Health
- 1997 Member, Executive Committee of the Association of Schools of Public Health
- 1997-2000 National Advisory Environmental Health Sciences Council of the National Institutes of Health
- 1998-Pres. Member, U.S. Section of the Great Lakes Science Advisory Board of the International Joint Commission
- 2000-Pres. Member, Board of Directors, Pacific Basin Consortium for Hazardous Waste Health and Environment; Treasurer, 2001-2004, 2008-pres; Chair, 2004-2008
- 2001-2008 United States Co-Chair, Workgroup on Ecosystem Health of the Science Advisory Board of the International Joint Commission
- 2002-2003 Member, Committee on the Implications of Dioxin in the Food Supply, The National Academies, Institute of Medicine
- 2003-2008 Member, United States Environmental Protection Agency, Children's Health Protection Advisory Committee
- 2003-Pres. Chair, Advisory Committee to the World Health Organization and National Institute of Environmental Health Sciences on collaborative activities.
- 2007-2011 Chair, Workgroup on Risks vs. Benefits of Fish Consumption, Science Advisory Board, International Joint Commission.